CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-2017-06-14-09** **Date: 16-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer's Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	14-06-17
Sample ID No	:	2017-06-14-09/01
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	15-06-17

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**67**	60 to 70
2	Softening Point, °C	**49.4**	Min. 40°C
3	Ductility, cm	**93**	Min. 75cm
4	Flash point, °C	**228**	Min. 220°C
	Fire point, °C	**242**	

Note:
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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2017-06-12-03** **Date: 14-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	12-06-17
Sample ID No	:	2017-06-12-03/01
Type of Mix	:	WMM (Wet Mix Macadam)
Date of test	:	12-06-17
Oven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	275	275	2.5	97.5	95-100
22.4	2174	2449	22.3	77.7	60-80
11.2	2239	4688	42.6	57.4	40-60
4.75	2317	7005	63.7	36.3	25-40
2.36	1673	8678	78.9	21.1	15-30
0.6	746	9424	85.7	14.3	8-22
0.075	1228	10652	96.8	3.2	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2017-06-12-03**	**Date: 14-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.	
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.	
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06	
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97	
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	12-06-17	
Sample ID No	:	2017-06-12-03/01	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	12-06-17	

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	303.5	303.5
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	75.8	75.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	227.4	228.1
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.3	0.4
5	Aggregate impact value	(B/A)*100	25.0	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.8	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2017-06-12-03** **Date: 14-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	12-06-17
Sample ID No	:	2017-06-12-03/01
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	12-06-17

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	13.2%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.4%	
Combined Flakiness and Elongation Index for WMM	25.6%	

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TEST RESULTS OF GRADATION FOR SDBC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2017-06-19-04**	**Date: 21-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.	
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.	
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.	
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97	
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	19-06-17	
Sample ID No	:	2017-06-19-04/01	
Type of Mix	:	SDBC-Plant (Semi Dense Bituminous Concrete)	
Date of test	:	19-06-17	
Weight of Sample	:	5000 Grams	

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-
13.2	0	0	0	100	100
9.5	327	327	6.54	93.46	90-100
4.75	2374	2701	54.02	45.98	35-51
2.36	1027	3728	74.56	25.44	24-39
1.18	425	4153	83.06	16.94	15-30
0.3	362	4515	90.30	9.70	9-19
0.075	174	4689	93.78	6.22	3-8
PAN	311	5000	100.00	0.00	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2017-06-19-04** **Date: 22-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	19-06-17
Sample ID No	:	2017-06-19-04/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	19-06-17

Physical Requirements fo Coarse Aggregate for Semi Dense Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.3	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	11.6		
Strength	Aggregate Impact Value	22.3	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.56	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.27	Maximum 2%	IS:2386 Part III

Note:

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2017-06-19-04** **Date: 22-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	19-06-17
Sample ID No	:	2017-06-19-04/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	19-06-17

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.0	2.0		
3	98.5	1.5		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2017-06-19-04** **Date: 22-06-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	19-06-17
Sample ID No	:	2017-06-19-04/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	19-06-17

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-16
1	Marshal Stability at 60°C, KN	11.06	11.13	8.2KN(min)
2	Marshal flow at 60°C, mm	3.46	3.35	2-4
3	Percent air Voids	4.27	4.22	3-5
4	Percent Voids in mineral Aggregate(VMA %)	13.88	13.94	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.72	71.2	65-75
6	Density, g/cc	2.25	2.26	–

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TEST RESULTS OF GRADATION FOR SDBC
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2017-07-17-02** **Date: 18-07-17**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub division, BBMP, Bangalore.
Project Name	:	Resurfacing of the roads in Bhagyashree layout in Ward no.06 Byatarayanapura Sub division.
Agency	:	Sri. R. Nataraj, Contractor, #860, 19th cross, 5th block, HMT layout, Vidyaranyapura, Bangalore-97
Customer Reference	:	EE/BTP/BBMP/E-PMT/67/2014-15
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	17-07-17
Sample ID No	:	2017-07-17-02/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	17-07-17

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	502	501
2	Weight of the sample After extraction	B	475	478
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.38	4.59
4	Average percentage	%	5.0	

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Lab ID : CP-RW-2017-07-17-02 **Date: 18-07-17**

Sample ID No : 2017-07-17-02/01

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 475

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	23	23	4.84	95.2	90-100
4.75	235	258	54.32	45.7	35-51
2.36	69	327	68.84	31.2	24-39
1.18	32	359	75.58	24.4	15-30
0.3	53	412	86.74	13.3	9-19
0.075	32	444	93.47	6.5	3-8
PAN	31	475	100.00	0.0	0

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 478

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	18	18	3.77	96.2	90-100
4.75	239	257	53.77	46.2	35-51
2.36	72	329	68.83	31.2	24-39
1.18	35	364	76.15	23.8	15-30
0.3	56	420	87.87	12.1	9-19
0.075	37	457	95.61	4.4	3-8
PAN	21	478	100.00	0.0	0

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